What Is Claimed Is:

1. Polymer patterns formed on a substrate in a given shape, the polymer patterns having at least one pattern which is concave from the surface of the polymer pa
tterns in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface.

2. The polymer patterns of Claim 1, wherein the vertical cross-section of the concave pattern has a circular or oval shape, the top of which is cut in a straight line.

3. The polymer patterns of Claim 1, wherein the concave patterns are close to each other so as to have high density, as the distance between the adjacent polymer patterns is reduced.

4. The polymer patterns of any one of Claims 1 to 3, wherein the polymer is one of a positive photosensitive polymer and a negative photosensitive polymer.

5. The polymer patterns of Claim 1, wherein the vertical cross-section of the concave pattern has a circular or oval shape whose top and bottom are cut in a straight line, and it satisfies the following relation:

$$90° \leq A \leq 180°$$

wherein A represents the angle between the lower surface of the polymer patterns and a straight line which connects a point where the upper surface of the polymer patterns meets the concave pattern to a point where the lower surface of the polymer patterns meets the concave pattern.

6. A method for forming polymer patterns on a substrate in a given shape, the method comprising the steps of:

(a) applying a photosensitive polymer on the substrate to form a polymer film;

(b) placing a photomask on the polymer film; and

(c) irradiating the polymer film with a light moving in any directions through the photomask, so as to form at least one pattern which is concave from the surface of the polymer film in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface.

7. The method of Claim 6, wherein the step (b) further comprises the substep (b-1) of placing a diffuser on the photomask, in which the diffuser serves to change the light moving in any direction into a light source perpendicularly incident to the surface of the polymer film and to scatter the perpendicularly incident light source in any directions.

8. Metal film patterns formed on a substrate in a given shape, the metal film patterns having at least one pattern which is concave in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface.

9. The metal film patterns of Claim 8, wherein the inside of the metal film patterns is filled with polymer.

10. The metal film patterns of Claim 9, wherein the inside of the metal film patterns is formed of empty space.

11. The metal film patterns of Claim 9 or 10, wherein the top of the metal film patterns is open.

12. A method for forming metal film patterns on a substrate in a given shape, the method comprising the steps of:

(a) applying a photosensitive polymer on the substrate to form a polymer film;

(b) placing a photomask on the polymer film;

(c) irradiating the polymer film with a light moving in any direction through

the photomask, so as to form at least one pattern which is concave in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface; and

(d) applying a metal film on the polymer patterns.

13. The method of Claim 12, wherein the step (b) further comprises the substep (b-1) of placing a diffuser on the photomask, in which the diffuser serves to change the light moving in any direction into a light source perpendicularly incident to the surface of the polymer film and to scatter the perpendicularly incident light source in any directions.

14. The method of Claim 12, wherein the step (b) of applying the metal film is performed by thin film deposition methods, including sputtering, or thick film-forming methods, including plating.

15. The method of any one of Claims 12 to 14, which further comprises, after the step (d), the step of removing the polymer by a remover.

16. A metal film electrode having a curved metal electrode formed by the method of Claim 12, in which the curved metal electrode is formed in such a manner that the curved metal electrode and an electrode opposite thereto are in an

the two electrodes.

17. Cantilever beams formed by the method of Claim 12, which have a round cross-section.

18. Metal patterns formed on a substrate in a given shape, the metal patterns having at least one pattern which is concave in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface.

19. The metal patterns of 18, wherein the vertical cross-section of the

concave pattern has a circular or oval shape, the top of which is cut in a straight line.

20. A method for forming metal patterns on a substrate in a given shape, the method comprising the steps of:

(a) applying a photosensitive polymer on the substrate to form a polymer film;

(b) placing a photomask on the polymer film; and

(c) irradiating the polymer film with a light moving in any direction through the photomask, so as to form at least pattern which is concave in a direction perpendicular to the substrate and extends in a direction parallel to the substrate, wherein the vertical cross-section of the concave pattern has at least one curved surface;

(d) depositing a metal material on the polymer patterns; and

(e) removing the polymer by a remover.

21. The method of Claim 20, wherein the step (b) further comprises the substep (b-1) of placing a diffuser on the photomask, in which the diffuser serves to change the light moving in any direction into a light source perpendicularly incident to the surface of the polymer film and to scatter the perpendicularly incident light in any directions.

22. The method of Claim 20, wherein the step (b) of applying the metal film is performed by thin film deposition methods, including sputtering, or thick film-forming methods, including plating.

23. Metal interconnections formed by the method of Claim 20, which have a round cross-section.

24. A plastic mold having a given shape, in which all or part of the vertical cross-section of at least one protrusion formed on the surface of the plastic mold has a round surface.

25. The plastic mold of Claim 24, wherein the inside of the plastic mold has empty spaces.

26. The plastic mold of Claim 25, wherein the empty spaces are used as microfludic channels.

27. A method for forming a plastic mold having a given shape, the method comprising the steps of:

(a) applying a photosensitive polymer on the substrate to form a polymer film;

(b) placing a photomask on the polymer film;

(c) irradiating the polymer film with a light moving in any direction through the photomask, so as to form polymer patterns, all or part of the vertical cross-section of which has a round surface;

(d) applying and solidifying a polymer having different properties from the photosensitive polymer on the polymer patterns;

(e) separating the solidified polymer from the substrate; and

(f) removing the photosensitive polymer from the solidified polymer.

28. A microlens array formed using the round protrusions of the plastic mold formed by the method of Claim 27.

29. A three-dimensional planar microlens array formed using the round protrusions of the plastic mold formed by the method of Claim 27.